May 30, 2001

Donna Wieting, Chief
Marine Mammal Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring,
MD 20910-3226

Fax #: 301-713-0376

Re: US Navy's SURTASS LFA Sonar FEIS & the NMFS Intent to Rule

Dear Chief Wieting,

Today, in Science DAILY Magazine, an article was published with the following title,

"Babies Have A Different Way of Hearing The World By Listening To All Frequencies Simultaneously"

The article is based on a study conducted at the University of Washington, which determined that the hearing capacities and responses to "broadband" noise had a different response in human babies than it did in adults. The premise of such a finding, if carried over to our marine mammal cousins, simply begs the following questions:

1) What sort of testing would need to be conducted on marine mammal babies in order to determine their response levels to the invasive sounds of LFAS and in order to determine the degree of damage which would be done by deploying such a system?

2) Wouldn't that be a saddistic experiment to conduct?

3) Would the increased presence of noise impede the linguistic learning process for marine mammal babies even if the noise at a distance did not create direct cellular damage?

Additionally, thanks to this article which is only just published today, I would again question the Navy's failure to look at the sound absorption rate and it's potential for creating an environmental impact within coastal communities. If human infants can readily perceive the invasive sounds and vibrations of LFAS, then perhaps the proposed ruling, which your office is contemplating, would require some coastal day care centers to be closed. And, if they're in close proximity to the water, it may be necessary to close some hospitals which would otherwise give care to infants. And possibly some playgrounds which are near the shoreline would need to be restricted to older children and adults.. And vacation spots where people rent cabins on the water would probably need to be restricted to adults only. And wharfs where they might sit in a restaurant and order the family night special would be made unsuitable to children. And the beaches, of course, would have to be closed whensoever a SURTASS LFA Ship might be in the vacinity. By the way, would the Navy willingly inform coastal citizenry of their presence? If not, how would anyone know when to close the beaches and get out of the water?

And is the Navy saying they can "mitigate" this kind of coastline sound exposure? How would the Navy know whether or not this can be done if they haven't tested babies in coastal communities for their capacity to perceive this range of sound frequencies?

From what I can tell of the FEIS, the Navy didn't address any of the coastal sound absorption issues.

Some communities like Aptos, California, have their homes right on the sand. And ocean water engulfs people's

homes with the varying tides. How will you assure the people in such a community that there will be no influence from this invasive technology? In my previous communications I have provided you with several examples of noise pollution from sonar being heard/felt/perceived on shore. According to the people in Los Alamos Labs of New Mexico, the low frequencies can be heard half a planet away.

Now how does the US Navy intend to "mitigate" that?

Who will protect America's Shores from Low Frequency Active Sonar? Clearly, the Navy will not!

Thank you,

Cheryl A. Magill

Coordinator

Stop LFAS Worldwide Network

1556 Halford Ave.

Santa Clara, CA 95051

Reprinted from Science*Daily* Magazine ...

Source: **University Of Washington**
Date Posted: **Wednesday, May 30, 2001**
Web Address: **http://www.sciencedaily.com/releases/2001/05/010529233110.htm**

Babies Have A Different Way Of Hearing The World By Listening To All Frequencies Simultaneously

The world apparently sounds very different to infants than it does to adults. Sometimes it's filled with a cacophony of sounds that makes it difficult for babies to distinguish a single sound from all the surrounding noise, says a University of Washington scientist. That's because babies are generalists and hear all frequencies simultaneously so they can respond to unexpected sounds, reports Lynne Werner, a UW professor of speech and hearing science, in the May edition of The Journal of the Acoustical Society of America.

"Babies have a different way of listening to the world," contends Werner. "In real life we are confronted with a variety of sounds. Somehow the adult brain takes all sounds we hear and separates them into where they are coming from and then focuses on the one we want to hear. Adults usually hear in a narrow band of sound, while babies seem to use a different approach. They don't have the selective attention of adults and they don't pay attention all of the time. Instead they always seem to be listening broadband or to all frequencies simultaneously."

Researchers have known for some time that babies are born with functioning hearing and that sensitivity to sound improves dramatically during infancy. Improvements continue through age 10 when the average child's hearing is comparable to an adult's.

To further understand how babies hear, Werner tested 73 infants ages 7 to 9 months and 40 adults 18 to 30 years old. All had normal hearing. They were individually exposed to four half-second bursts of a computer-generated 1000-hertz tone and a 1000-hertz broadband noise that sounded like telephone dial tone or static. Sometimes the tone or the noise was played alone and sometimes the sounds were masked with background noise. The sounds were played at different levels of loudness to see if the subjects could detect them. Subjects heard the sounds through foam earphone inserts that were placed in the right ear canal.

The computer randomly generated the four different types sound and the infants were trained to respond when they heard a sound. Infants were seated in their mother's lap in a test booth and an assistant kept the child attentive and entertained by manipulating silent toys on a table in front of the child. The assistant and mother wore headsets and listened to masking sounds to ensure that they could not hear any of the sounds presented to the child. An observer outside the booth watched and scored the child's responses through a window or on a video monitor. Infants were rewarded for responding to a signal by the activation of a mechanical toy. Typically babies turned toward the sound or changed their activity level when they heard something. Infant also responded by pronounced change in their facial expression or by looking at their mother.

Adults were tested in a similar fashion, sitting alone in the booth. They were told to raise a hand when they heard a sound that would activate the mechanical toy.

Werner found that on average babies are relatively better at detecting noise than tones. In the quiet condition the infant-adult difference in detecting noise was 14 decibels versus 7 decibels in the masked trials. A 15-decibel deficit in adults is the equivalent of a minor hearing loss, she said. With the background masking the infant-adult difference in detecting the tone was 10 decibels and 5 decibels for the noise.

In addition, Werner said preliminary examination of 11 infants' psychometric function for detecting broadband noise does not support the idea proposed by some scientists that babies pay more attention to broadband noise than to tone.

Like 10 adults also tested, infants produce similar psychoacoustic functions for broadband noise ...

"If you are a baby it is sensible to listen broadband, and it was valuable for our ancient ancestors for survival in the Serengeti (the Serengeti Plain of Eastern Africa)," says Werner. "But in today's western culture a baby is at a great disadvantage. All the noise we expose people to makes it difficult for babies. The practical lesson from this research is, if you are talking to a baby or reading her a story, background noise can be a problem. Turn off the television or radio."

Co-author of the study is Kumiko Boike, a UW doctoral student who did preliminary research as an undergraduate. The study was funded by National Institute of Deaf and Communicative Disorders, one of the National Institutes of Health.
